



iwd - State of the union

Marcel Holtmann
October 2019

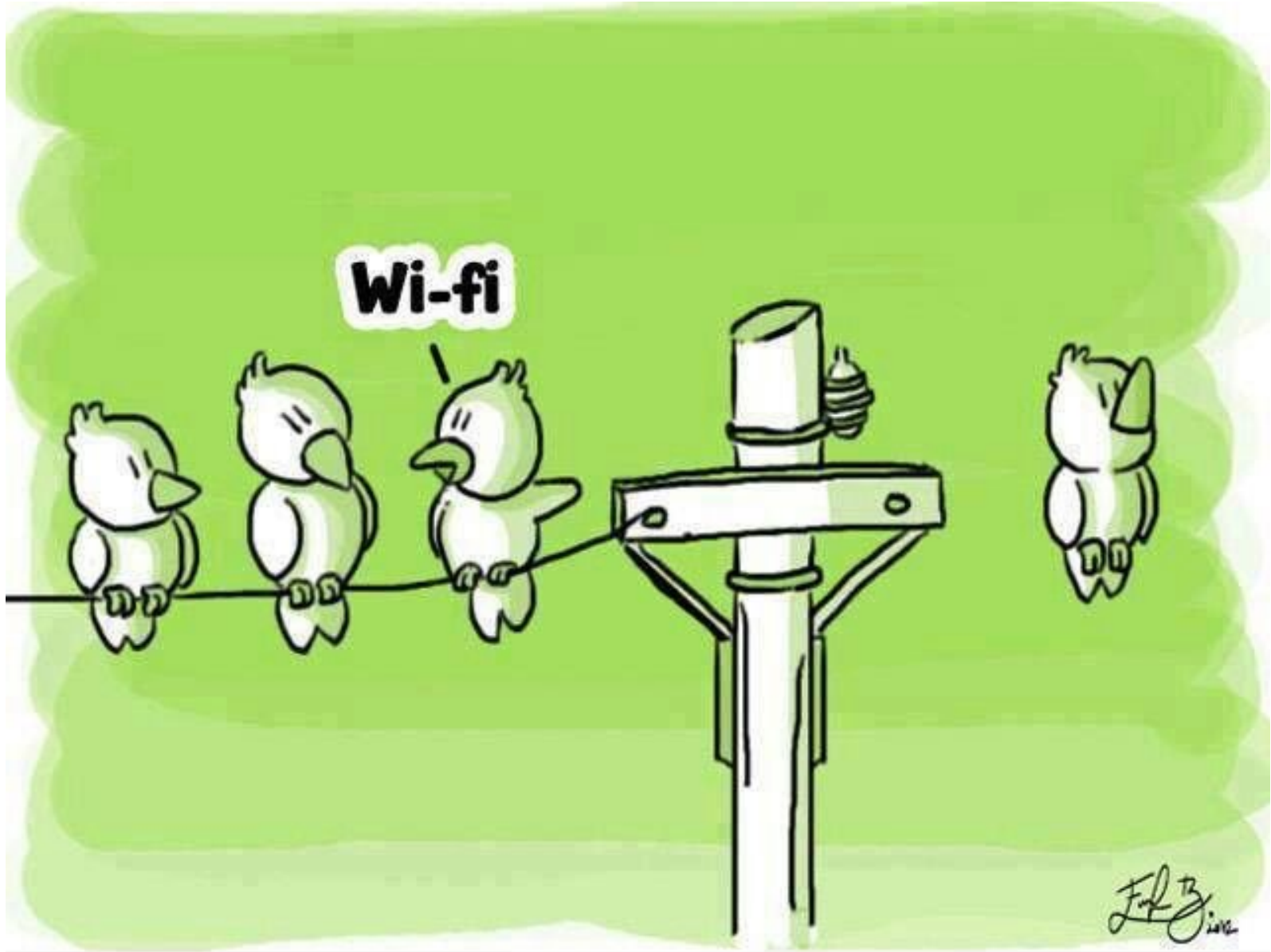
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1.0



Wi-Fi on Linux still sucks

I want to be a pirate.

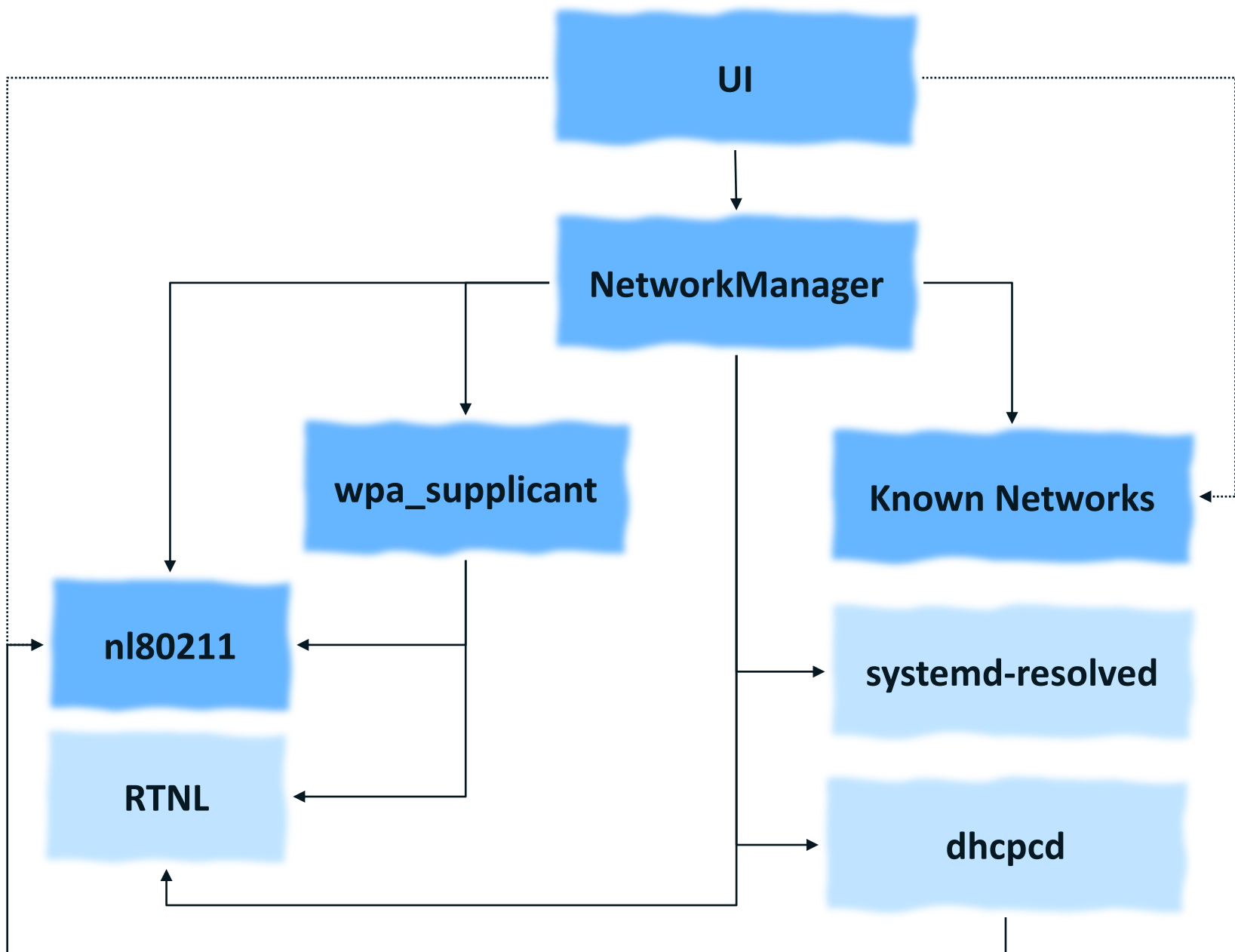


The three trials!

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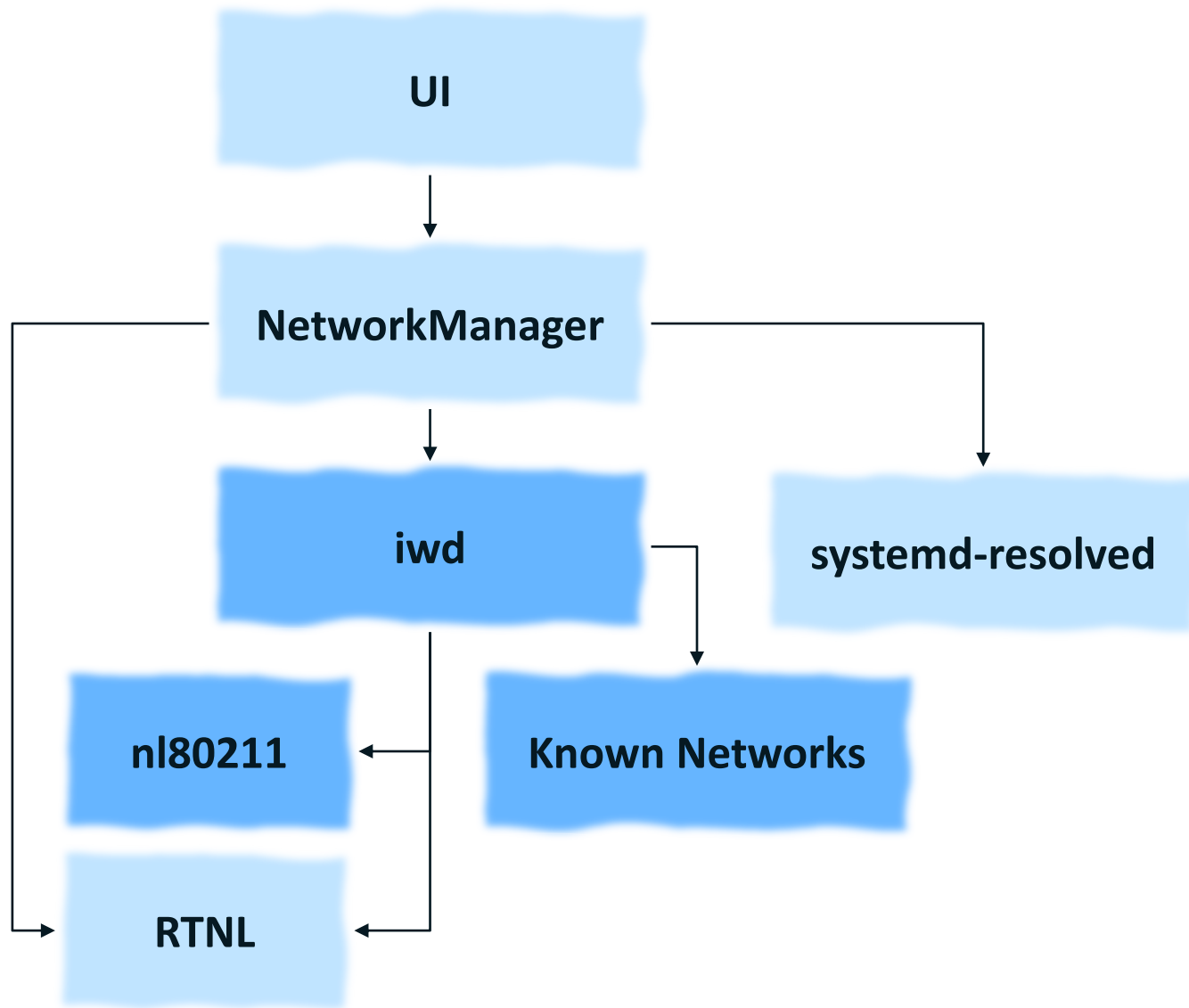




I've got JUST the boat for you!



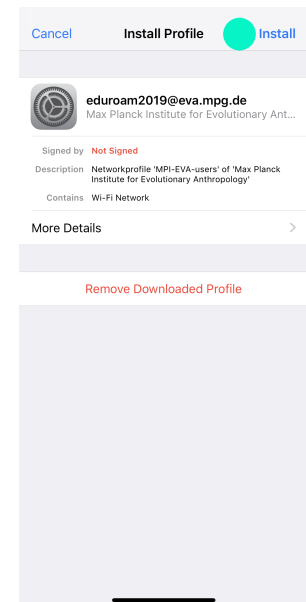
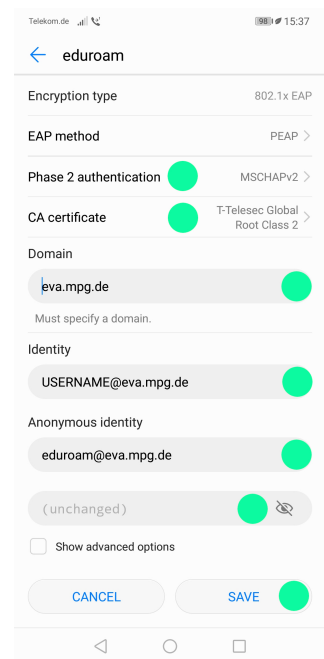
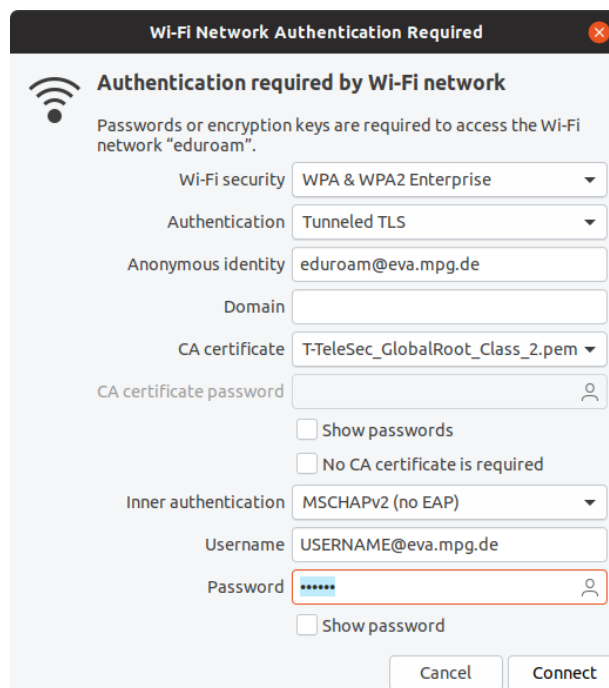
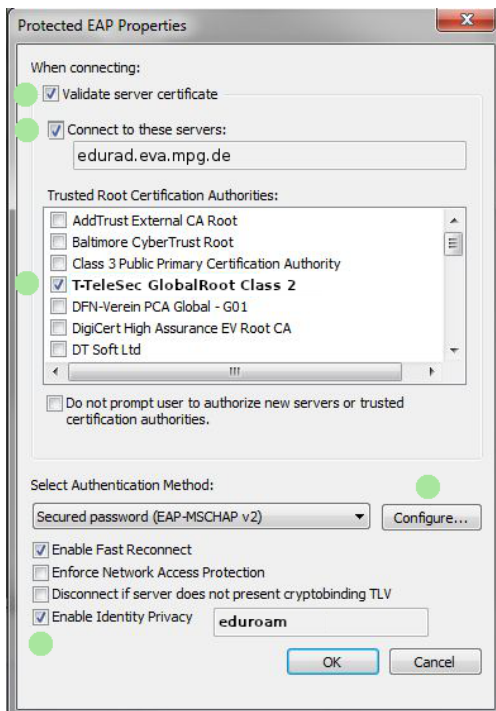




- Centralized known networks database
- Personal and enterprise network provisioning
- Optimized scanning
- Roaming and fast transitions
- Radio resource management
- Automatic WPA3 and OWE support
- Integrated EAP engine
- Hotspot 2.0 support
- Simple Configuration and Protected Setup
- Address randomization for privacy
- Access Point mode for Personal Hotspot

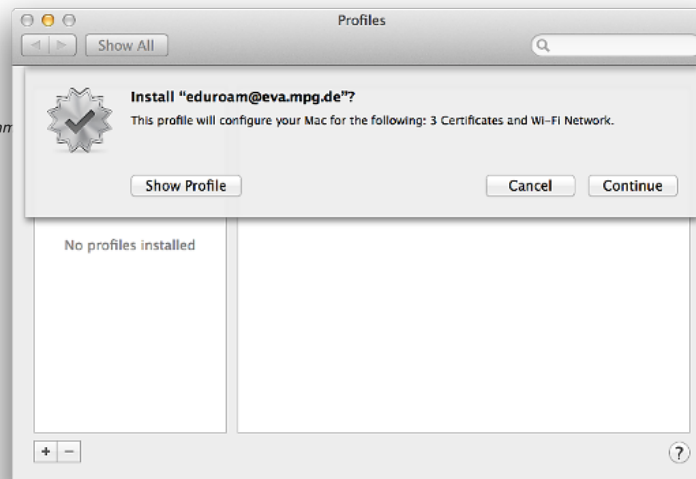


Improving provisioning



- Now press **Windows-Key+R** and type in **cmd**
- Now press **Ctrl+Shift+Enter** and answer with **yes** to open an administrative Command Prompt
- Insert the following command to install the eduroam Wi-Fi profile:

```
netsh wlan add profile filename="C:\WiFi-eduroam-MPIEVA.xml"
```



<https://www.eva.mpg.de/service/it/network-for-guests/wlan-eduroam.html>

```
# TLS
[Security]
EAP-Method=TLS
EAP-TLS-ClientCert=/certs/client-cert.pem
EAP-TLS-ClientKey=/certs/client-key.pem
EAP-TLS-CACert=/certs/ca-cert.pem
EAP-TLS-ServerDomainMask=*.domain.com
```

```
# TTLS + PAP
[Security]
EAP-Method=TTLS
EAP-Identity=open@identity.com
EAP-TTLS-CACert=/certs/ca-cert.pem
EAP-TTLS-Phase2-Method=Tunneled-PAP
EAP-TTLS-Phase2-Identity=username
EAP-TTLS-Phase2-Password=password
EAP-TTLS-ServerDomainMask=*.domain.com
```

```
# PWD
[Security]
EAP-Method=PWD
EAP-Identity=user@domain.com
EAP-Password=secret123
```

```
# PSK
[Security]
Passphrase=secret123
```

```
# TLS with embedded certificates
[Security]
EAP-Method=TLS
EAP-TLS-ClientCert=embed:client_cert
EAP-TLS-ClientKey=embed:client_key
EAP-TLS-CACert=embed:ca_cert
EAP-TLS-ServerDomainMask=*.domain.com

[@pem@ca_cert]
----- BEGIN CERTIFICATE -----
MIIEajCCA1KgAwIBAgIUWB7MPgcDDAF7TDEPD5bdizrXRSUwDQYJKoZIhvcNAQEL
BQAwEDE1MDMGA1UECgwsSW50ZXJuYXRpb25hbCBVbmlvbiBvZiBFeGFtcGx1IE9y
...
pggZ4vLtlFLiG8ktfL/DMbToKaISFV+Z4grKjrNY
----- END CERTIFICATE -----

[@pem@client_cert]
----- BEGIN CERTIFICATE -----
MIIEUzCCAzugAwIBAgIU2iku6AR8PCNUP30eU7nbOASuXowDQYJKoZIhvcNAQEL
BQAwEDE1MDMGA1UECgwsSW50ZXJuYXRpb25hbCBVbmlvbiBvZiBFeGFtcGx1IE9y
...
0Kuwj5fqiA==
----- END CERTIFICATE -----

[@pem@client_key]
-----BEGIN PRIVATE KEY-----
MIIEvQIBADANBgkqhkiG9w0BAQEFAASCBCwggSjAgEAAoIBAQRiA4WnW892qOE
iTEsSsBYfMQCNJzyyIwnfJxFoCqAp3lBrvieiClRTNWXEYNOqbJg5MwH+hdHz32t
...
x5suh0ta8S/wE+jCh3QfxFo=
-----END PRIVATE KEY-----
```

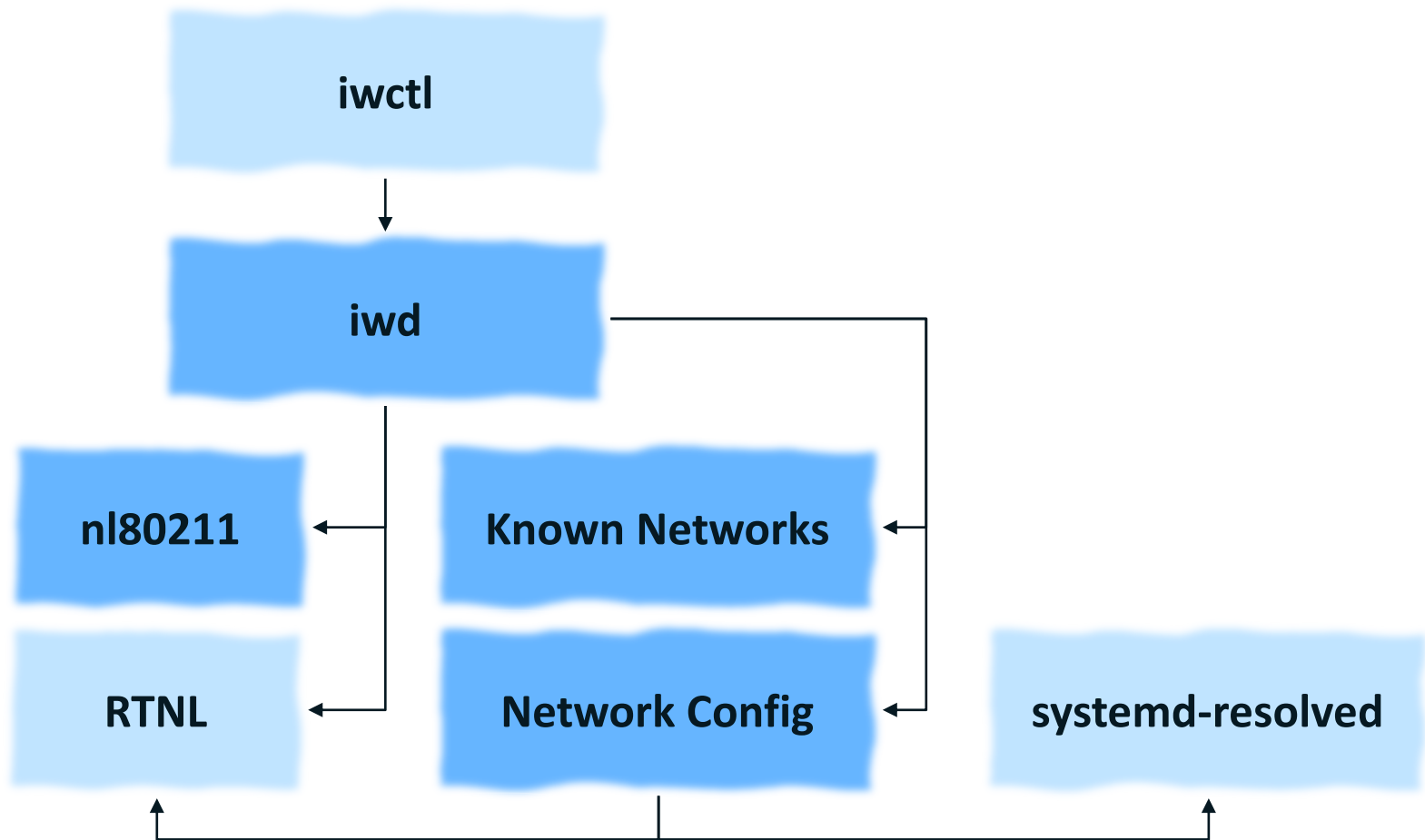
`man iwd.network.5`

Linux Wi-Fi provisioning needs a standard

Ah! A red herring!



I'm looking for the Sword
Master of Mêlée Island™.



- Integrated DHCP v4 client
- Integrated network configuration
- IPv6 routing and DNS configuration
- Support for systemd-resolved and resolvconf

- Experimental and work in progress

`man iwd.config.5`

Please! I have a wife and three children!

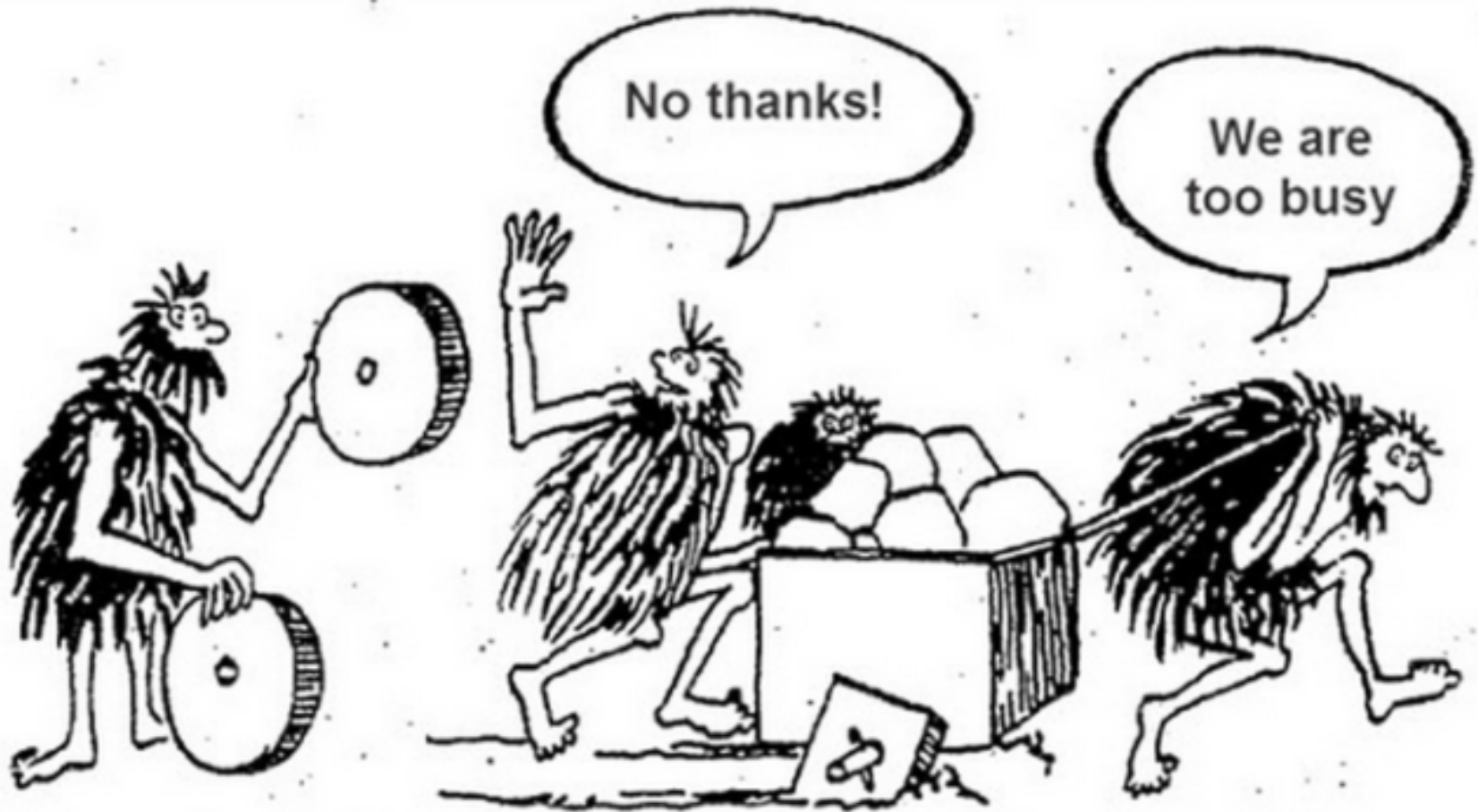


- Goal is a complete connection in 100ms or less
- Fully integrated setup
 - Scanning ~100ms
 - Connecting ~100ms
 - DHCP 50-100ms
- Without PAE over nl80211 it is 4x slower
- Address randomization adds another 300ms to it
- Android folks reported 3 seconds penalty



iwd can not work miracles

nl80211 needs optimizations



iwd 1.0 is the latest

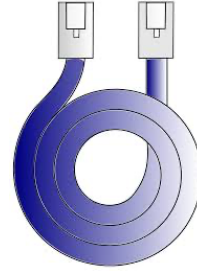
~40k SLOC
~2500 commits
28 contributors

Please test and report bugs



I'm Stan of Stan's Previously
Owned Vessels.

ead



apd



rsd

